IV. AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A radiographic apparatus for obtaining radiographic images, comprising:

radiation emitting means for emitting radiation toward an object under examination;

radiation detection means for detecting radiation after the radiation is emitted toward the object under examination;

signal sampling means for taking radiation detection signals from the radiation detecting means at predetermined sampling time intervals; and

time lag removing means for ~~obtaining~~ determining lag-free radiation detection signals by subtracting said lag-free radiation detection signals ~~by removing said lag-free radiation detection signals~~ from the respective radiation detection signals by a recursive computation, on an assumption that a lag-behind part included in each of said radiation detection signals taken by said signal sampling means at the predetermined sampling time intervals is due to an impulse response formed of one exponential function or a plurality of exponential functions with different attenuation time constants;

said radiographic images being derived from said lag-free radiation detection signals obtained by said time lag removing means.

2. (Original) A radiographic apparatus as defined in claim 1, wherein said time lag removing means is arranged to perform the recursive computation for removing the lag-behind part from each of the radiation detection signals, based on the following equations A-C:

$X_k = Y_k - \sum_{n=1}^{N}\{\alpha_n \cdot [1-\exp(T_n)] \cdot \exp(T_n) \cdot S_{nk}\}$ ... A

$T_n = -\Delta t / \tau_n$ ... B

$S_{nk} = X_{k-1} + \exp(T_n) \cdot S_{n(k-1)}$ ... C

where

Δt: the sampling time interval;

k: a subscript representing a k-th point of time in a sampling time series;

Y_k: an X-ray detection signal taken at the k-th sampling time;

X_k: a lag-free X-ray detection signal with a lag-behind part removed from the signal Y_k;

X_{k-1}: a signal X_k taken at a preceding point of time;

$S_{n(k-1)}$: an S_n at a preceding point of time;

exp: an exponential function;

N: the number of exponential functions with different time constants forming the impulse response;

n: a subscript representing one of the exponential functions forming the impulse response;

α_n: an intensity of exponential function n; and

τ_n: an attenuation time constant of exponential function n.

3. (Original) A radiographic apparatus as defined in claim 1, wherein said signal sampling means is arranged to start taking the radiation detection signals at the sampling time intervals before emission of the radiation, and said time lag removing means is arranged to obtain the lag-free radiation detection signals by using said radiation detection signals taken before emission of the radiation.

4. (Original) A radiographic apparatus as defined in claim 1, wherein said signal sampling means is arranged to take the radiation detection signals for one radiographic image continually at each period between the sampling time intervals, and said time lag removing means is arranged to obtain, continually at each period between the sampling time intervals, the lag-free radiation detection signals corresponding to the radiation detection signals for the one radiographic image, the radiographic images being obtained continually at the sampling time intervals from said lag-free radiation detection signals for dynamic display.

5. (Original) A radiographic apparatus as defined in claim 4, wherein a computation of said lag-free radiation detection signals and an acquisition and dynamic image display of the radiographic images are performed in real time.

6. (Original) A radiographic apparatus as defined in claim 1, wherein said radiation detecting means is a flat panel X-ray detector having numerous radiation detecting elements formed of a semiconductor and arranged longitudinally and transversely on a radiation detecting surface.